

# Notice of Allowability

Application No.

10/738,421

Examiner

Christian A. Hannon

Applicant(s)

NAKATANI ET AL.

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/5/2007.
2. ☒ The allowed claim(s) is/are 1-5 and 13-21.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### **Examiner's Amendment**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment it MUST be submitted no later than the payment of the issue fee.
2. Authorization for the examiner's amendment was given in a telephone interview with Lawrence E. Ashery (34515) on April 10, 2007.
3. The application has been amended as follows:

In the Claims:

Claim 1, line 14, after the phrase 'a signal of an in-phase component' insert --of said in-phase signal--.

Claim 3, line 13, after the phrase 'the signal of the in-phase component' insert --of said in-phase signal--.

Claim 4, line 17, after the phrase 'a signal of an in-phase component' insert --of said in-phase signal--.

Claim 13, line 2, after the phrase 'apparatus according to' change "any one of claims 1, 6, 11, 12" to --claim 1--.

Claim 14, line 2, after the phrase 'apparatus according to' change " any one of claims 1, 6, 11 and 12" to --claim 1--.

Cancel claims 7, 8, 9, 10, 11, and 12.

## REASONS FOR ALLOWANCE

### *Allowable Subject Matter*

4. Claims 1-5 & 13-21 are allowed over the cited prior art.

Regarding claim 1, Tikka et al (US 2003/0060170), hereinafter Tikka, teaches a radio communication apparatus comprising an antenna (page 3, [0051]; Tikka), a transmitting apparatus of outputting a transmitting signal in a first frequency band (Page 1, [0003]; Tikka), a duplexer, connected to said antenna and having a single phase input terminal and a balanced output terminal, of said conveying said transmitting signal inputted to single phase input terminal to said antenna and outputting a receiving signal in a second frequency band different from said first frequency band received from said antenna substantially as a differential signal from said balanced output terminal (Page 3, [0049, [0052]; Tikka). However Tikka fails to disclose outputting a part of said transmitting signal as an in phase signal from said balanced output terminal and a receiving apparatus connected to said balanced output terminal and having a circuit in which a gain of a signal of a differential component is higher than that of a signal of an in phase component or a loss of the signal of the differential component is lower than that of the signal of the in phase component.

Regarding claim 3, Tikka teaches a duplexer comprising a single phase input terminal connected to a transmitting apparatus and a balanced output terminal connected to a receiving apparatus wherein, said transmitting apparatus outputs a transmitting signal in a first frequency band, conveys said transmitting signal inputted to said single phase input terminal to an antenna and outputs a receiving signal in a

second frequency band different from said first frequency band received from said antenna substantially as a differential signal to said balanced output terminal (Page 3, [0049],[0052]; Tikka). However Tikka fails to teach that said duplexer outputs a part of said transmitting signal as an in phase signal from said balanced output terminal and said receiving apparatus has a circuit in which a gain of a signal of a differential component is higher than that of a signal of an in phase component or a loss of the signal of the differential component is lower than that of the signal of the in phase component.

Regarding claim 4, Tikka teaches an antenna apparatus comprising one antenna having a first feeding point of feeding a receiving signal and also having two or more polarized waves, wherein said first feeding point is placed substantially on an exciting direction side of the receiving of signal of said one antenna (Page 3, [0051]; Tikka). However Tikka fails to teach another antenna placed along with said one antenna and having a second feeding point of feeding the receiving signal and also having two or more polarized waves and said second feeding point is placed substantially on an opposite side to the exciting direction of the receiving signal of said another antenna. Nor does Tikka teach outputting a part of said transmitting signal as an in phase signal from said balanced output terminal and receiving apparatus connected to said balanced output terminal and having a circuit in which a gain of a signal of a differential component is higher than that of a signal of an in phase component, or a loss of the signal of the differential component is lower than that of the signal of the in phase component.

Regarding claim 17, Tikka teaches a radio communication apparatus comprising a transmitting apparatus of outputting a transmitting signal (Figure 3, Item 110; Tikka), an antenna apparatus (Figure 3, Item 120; Tikka) and a duplexer (Figure 3, Item 100; Tikka), however Tikka fails to teach a duplexer, connected to said antenna apparatus and having a single phase input terminal and a balanced output terminal, of conveying said transmitting signal inputted to said single phase input terminal to said antenna apparatus and outputting a receiving signal received by said antenna apparatus from said balanced output terminal and wherein said duplexer has an impedance for a differential signal in a frequency band of said receiving signal higher than the impedance for a single phase signal in the frequency band of said transmitting signal.

Regarding claim 21, Tikka teaches a radio communication method comprising the steps of conveying to an antenna at transmitting signal in a first frequency band inputted to a single phase input terminal of a duplexer (page 3, [0052]; Tikka) outputting a receiving signal in a second frequency band different from said first frequency band received from said antenna substantially as a differential signal from a balanced output terminal of said duplexer (page 3, [0048-0049]; Tikka). However Tikka fails to teach outputting a part of said transmitting signal as an in phase signal from said balanced output terminal and from a signal received from said balanced output terminal rendering a gain of a differential component higher than that of an in phase component of said signal or rendering a loss of the differential component lower than that of the in phase component.

Claims 2, & 13-16 are allowed as they depend from allowable claim 1.

Claim 5 is allowed as it depends from allowable claim 4.

Claims 18-20 are allowed as they depend from allowable claim 17.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "comments on Statement of Reasons for Allowance."

### ***Drawings***

5. The replacement drawings were received on 11/13/2006. These drawings are acceptable.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ostertag et al (US 7,123,591) disclose a frequency multiplex transmitter and method for eliminating crosstalk.

Nakamura et al (US 2002/0186757) disclose an antenna duplexer and mobile communication device using the same.

Uriu et al (US 2002/0101296) disclose a high frequency switch, radio unit and switching method.

Ho et al (US 5,815,803) disclose a wideband high isolation circulator network.

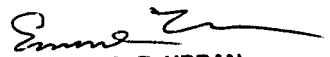
Art Unit: 2618

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian A. Hannon whose telephone number is (571) 272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



C. A. Hannon

April 10, 2007



EDWARD F. URBAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600